

Aviation News

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FEBRUARY 7, 1944

★
Plant Efficiency Amazes House Group

Military Affairs Subcommittee report reveals "remarkable progress" of industry in production, design, training in last few yearsPage 13

★
Management Stock Plan Studied

United's program revives question of extra incentive pay for executives; regarded as benefit, despite occasional abuses of systemPage 40

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Deferment Curb Blow to Aviation

Move to call 18-25 year olds poses new manpower problem to air industry; leaders warn of too great drain on workersPage 22

★
Aviation Faces Heavier Demands

AMA President Russell warns that ultimate result of war depends on how manufacturers meet increased needs of Army, NavyPage 27

★
Training Command's Scope Bared

More than 100,000 pilots graduated from AAF's flying and technical schools from Jan. 1, 1939 to Nov. 30, 1943, report revealsPage 7

★
Surprise Element in Rome Landings

Allies plastered fields near Italian capital, making aerial reconnaissance impossible before attack behind Nazi defense linesPage 16

★
CAB Data on Caribbean Survey

Report of F. H. Crozier's research, analysis division shows need for well-planned coverage with U. S. airplane routesPage 28

★
Loening Sees Vast Post-War Traffic

Possibilities underestimated, says WPB aircraft consultant; hails regulated competition as key to world commercial trafficPage 33



Directs AAF Training: Lieut. Gen. B. K. Yount, commanding general of the Training Command, providing airmen for the world's greatest air force in a program of such scope and complexity and volume as to overshadow the largest of the great business corporations. Over 100,000 pilots have been graduated from the command's schools.

THE PIECE OF PAPER that broke a bottleneck



Close-up of completed propeller hub.

"Work plan — 1776-D1" was the appropriate nomenclature for the machine and braces which today are making production figures unbelievable a few short months ago. They are the chief bottleneck breakers in putting out spline propeller hubs for a new type aircraft propeller. Made of especially hard steel, these new propellers could be turned out in mass production with the precision tolerances desired only by broaching. Exact production figures are a secret but hub splining is no longer the bottleneck.

The Lapointe HP-122 which broaches 2 propeller hubs at one time.

Close-up of broaching pinches clamping workpiece. Bottom.

The **LAPOINTE** Machine Tool Company

Hudson, Massachusetts U.S.A.

THE AVIATION NEWS

Washington Observer

SUPER-SECRET "SUPERFORTRESS" — It was not a unique position in which American newsmen found themselves when copies of the British magazine "Flight" arrived here carrying details of the B-28 "Superfortress," restricted information in this country. Such disclosures have developed before and probably will again before the war's end, but that doesn't make them any more pleasant. The AAF has said little about the B-28 other than that it does exist, that it has a name and that it boasts one present four-engine bomber. Regarding the story in "Flight," the AAF has noted it, but is not saying whether the detailed data are right or wrong and AAF review is not passing any B-28 specifications. Our Allies seem to be the best source for information on our new equipment.

VIE—THE B-28—It should be no comfort to the enemy to know that the B-28, according to "Flight," can carry 10,000 to 17,500 pounds of bombs for 1,000-mile range or 6,000 pounds for a 2,000-mile range—figures looked upon here with some doubt. The wing span is listed at 141 feet, compared with 100 feet on the Fortress, and the weight at between 100,000 and 120,000 pounds as against about 60,000 for the B-17. "Flight" says the B-28 is powered by Wright 2,000 hp engines and three-bladed propellers and that it retains the general features of the B-17, but has double tires on each wheel at itsicycle landing gear. Brake turbines operated by remote control are said to have replaced the Peruvian wheel positions. Heavily armored, of course, the B-28 is said to have a chin turret, dorsal, ball and tail turrets. It sounds like good news for our side and bad news for the Axis.

KAISER-SHUGHES CONTRACT—All indications here last week pointed in confirmation of the Kaiser-SHughes giant cargo plane project. It is understood that a report prepared by WTB's aircraft consultant, Grover Loening, makes clear that neither of the two flying machines under contract can fly for many months, and that production could not be undertaken for some months more. One of the three planes authorized under the contract was to be built for static tests only. The report was requested by top WTB authorities in connection with the stiffening of wingpiper and materials which might be devised to combat draft now flying instead of in experimental cargo planes.

NEW NAVY LIBERATOR—While it has been known for some time that the Navy has ordered which identifies Consolidated's Liberator bomber was to be replaced by a single-tail on the new Navy version, photographs had been forbidden until the Navy approved picturing of a desk-model, shown here. The single tail



changes the identity of the airplane, somewhat although the engine mounts and nose remain strictly Liberator. Some design changes and improvements have been made and it appears that the length of the plane has been somewhat increased. Built to exact scale are the models of Consolidated planes turned out by assembly line methods on the model shop. Dies and molds—measure counterparts of the tools used in producing the actual planes—turn out the fuselages and motor sections and other parts of such desk-size models as this PB4Y2.

GAS TAX FOR AIR FIELDS—There is talk in some state legislatures of adding taxes from the sale of gasoline for aviation purposes for improving airports and airports. Some state-wide legislatures even go so far as to envision a chain of state-operated airports, charging that revenue from such a source could support such a set-up. Taxes on automobile motor fuel have long been used in many states for highway construction and improvement work, taking this as a cue, aviation-minded legislators believe it could be applied to airports and landing strips.

IMMEDIATE DELIVERY ON PRIORITIES

HUNTER AND COMPANY
Aircraft Equipment
CLEVELAND • OHIO
1540 EAST SEVENTEENTH STREET

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THE STAFF

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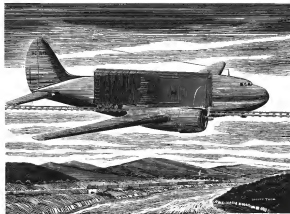
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Participations August	
Alvord & Dand Equipment Corp.	17
Amcor	51
Bank America Corp.	22
Bank International Co.	1st Conv
Central Light Co.	0
Comet Electric Co.	4th Conv
Geacook Co. The R. F.	17
Mail Oil Corp.	28
North & Kaufman, Inc.	11
Heuser & Company	4
Robert Appling Corp.	11
Lapointe Machine Tool Co.	1st Conv
Loft Systems Design Inc.	30
Midwest Petroleum Co.	18
Midwest Terminals Co.	14
Paul & Whitney Aircraft	10
Trucon Company The	10
Timber Resources Inc.	10

COMPLETE COVERAGE—The Navy doesn't often go in for gags but this montage, like all Official Navy Photographs, executed by "Photographer Anonymous, Second Class," shows how Navy photographers get complete coverage. This was a card sent out by Doolittle Squad.

LONG-TERM INVASION—A high government official speaking to several friends, gave

CUTBACK FALLACY—Some have dismissed the effect of contract changes has resulted in fallacious conclusions on cutbacks—particularly if a plant or a community has on one or more. Contractors have been canceled or, of course, but an example of the actual situation is seen in a situation of a few weeks ago when the procurement agencies advised of reductions which totaled nearly 154,000 workers. Those cutbacks were widely publicized. At the same time there were unfilled needs for \$68,688 for the same period.



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MODEL, AIRCRAFT AND PRODUCTION, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 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Competition War Between U.S., British Plane Designers Looms

West Coast aviation industry leaders forecast stiff battle for commercial air supremacy; England's policy of revealing plans for huge transports studied.

By SCHOLER BANGS

Casual inquiry within the West Coast aircraft industry discloses the conviction, an authoritative circle, that a crucial battle of wits is brewing between British and American airplane designers.

That Britain and America will be in stiff post-war competition for commercial air supremacy and attending international prestige is a conclusion that only time will prove.

► **Snake Screen**—However, among western aircraft experts are those who are convinced that

► **British's apparent willingness to allow publication of post-war airplane designs is a snake screen that foils no one among American engineering circles.**

► **Ultimate designs of American post-war planes and engines will be guarded as jealously as military secrets, if not more so, until they**

have resolved the actual flight stage.

They believe Britain has under wraps other post-war designs while parading in print sketches such as those of the proposed 100-, 150- and 200-ton "jet" submitted to the British Ministry of Aircraft Production.

While holding to this conviction, they confess they do not know whether Britain's post-war airplanes finally will appear as larger or smaller types. They believe, though, that they will be efficient in design and economy, and probably able to compete with the best this nation will produce.

► **Man on Jet Propulsion**—It is expected on the West Coast that the present rivalry based on details of jet propulsion will extend well into the post-war period for reasons of commercial security, and that manufacturers and their research

engineers will be equally restless in discussing the commercial possibilities of supersonic flight.

► **Flight Plane Outlook**—In southern California automobile dealers are studying the possibilities of post-war light plane franchises. They believe the Southwest will be the biggest market for family flybys and base expectations of successful sales on their automobile selling experience.

"Steady customers" of Los Angeles automobile dealers prior to the war seldom kept their cars long. Yearly trade-ins helped bend western new car sales. Western car owners were in sharp contrast with east coast buyers, who would keep an automobile for from six to twelve years before buying a new one.

► **LABOR RELATIONS**—A potential fracture in development of labor relations policies in the West Coast aircraft industry is the offering by Morris B. Pendleton, vice-chairman of the Los Angeles City's Manpower Committee, at a "War Commandments" suggestion. "Minimum fair pay for services rendered. Afford each employee opportunity to advance within the company. Fill vacancies by promotion, if present employees are qualified. Provide safe, healthful and harmonious working conditions. Assure each employee the

right to discuss freely with executives any matter concerning his own or the company's welfare. Treat all employees fairly and without discrimination. Love up to the spirit—as well as the letter—of all agreements with labor organizations and promote a better mutual understanding and relationship by fair and considerate dealings with their representatives. Carry on daily work in a spirit of friendliness and cooperation. Do all within power to make the company a satisfactory place in which to work, and a pride to the community.

Complete unanimity of all major West Coast aircraft factories with Douglas plants the scene of fraternal unionism is being offered a prize list of the "commandments." A delicate balance of employee good will, the objective of the "commandments," exists in the possibility that plants will supply with labor may withdraw various employee benefits that formerly induced workers to be content without union representation. Some plants now, without question, suggest that the unions assume responsibility for continuation of those benefits.

FEDERAL DIGEST

Parts Pool Formed For AAF and RCAF

Summary of week's activities in U. S. and war agencies.

A joint supply pool to spend equipment and parts to RCAF aircraft maintenance bases and to equip American troops stationed in Canada has been set up under auspices of the U. S. Army Air Service Command, the War Dept. announced.

The new system of joint supply shortens the arrival time of spare parts at Canadian airbases and streamlines aircraft bases making equipment necessary to keep planes in the air over the North Atlantic available to the RCAF. In addition, it eliminates such difficulties as flying supplies under abnormal weather conditions and dispatching requisitioned spare parts.

► **Motion Pictures**—A motion picture branch has been set up in the Industrial Services Division of the War Department to increase distribution of films that show the American worker the course of the war and the workers' part in it. The branch will have offices at



TWA'S NEW TYPE BUSHING FOR COWL FLAPS:

Transcontinental & Western Air is replacing metal bushings on engine mount flap assemblies with rubber bushings developed by Gen. H. Emerson Wright, TWA's mechanic at Kansas City. William Mansfield (left), superintendent of maintenance, describes the idea as "the greatest single economical suggestion ever made by a TWA employee."

1901 Broadway, New York. A. L. Lust is civilian consultant.

► **War Production Board**—WPB and Dept. of Labor have opened a drive to reduce industrial accidents which killed 18,440 workers in 1943 and caused loss of 58,830 man-days. The Industrial Health and Safety Section of WPB's Office of Labor Production will direct the campaign.

Chairman Donald Nelson has announced appointment of Lewis S. Greenleaf, Jr., an Director of the New York regional office of WPB. Harold H. Aronson has been named Deputy vice-chairman of WPB for Field Operations.

► **Construction**—Total volume of construction in the U. S. in November was \$101,298,000, the Board said. This is 13 percent less than in October, and 2 percent under the November schedule.

More than 34 billion board feet of lumber will be needed to meet the war requirements of the nation in 1944, according to J. Philip Boyd, director of WPB's Lumber and Lumber Products division. Construction for the Army, Navy, Maritime Commission and Air Corps alone will utilize 5 billion board feet.

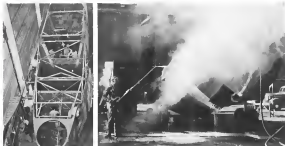
► **Conservation**—The eleventh "Ma-

terial Substitutes and Supply List" has been issued by WPB's Conservation division. This official list names some 400 materials needed in the war effort, arranged in groups, showing those whose supply is insufficient for essential needs, those in approximate balance, and those in excess of essential requirements.

The report shows an easing of copper and steel while chemicals and plastics are somewhat tighter than on the previous listing. The list may be obtained from the Editor, Conservation Division, Room 3615 Temple "D," Washington 25, D. C.

► **Office of Price Administration**—A complaint that the government has made in rail colling prices for Southern pine lumber in order to permit production of types of material needed in the war program.

Passenger car rationing program has been shifted from a "mileage" to an "occupational" basis. Hereafter, eligibility will be determined by the purpose for which a person drives his automobile rather than the distances he drives in a given month. After Feb. 1, any person who drives his car in connection with a highly essential occupation, regardless of his



CONVAIR TESTS HULLS OF FLYING BOATS:

Thousands of gallons of water are pumped into the massive compartments of Consolidated Valiant Aircraft Corp. Coronado flying boats to test absolute watertightness up to the level of maximum load waterline. Note jacks and wood contour braces holding

the hull firm against warping and bulging under pressure of the internal load. Convair Catalinas, on the other hand, are spray tested with a high pressure hose battering all hull seams. Photographs were taken at Consolidated Valiant's San Diego plants.

gasoline ratios, may apply for a Grade 1 file.

Price Reports Knew—COPA says manufacturers of certain rubber commodities purchased for Government use need no longer file extensive price reports in connection with experimental production and small orders. Purchase parts and equipment are included in the

commodities to which COPA referred. The amendment requires manufacturers affected to make reports of maximum prices when orders have been received for more than one unit and total sales reach \$1,000.

PAW—Higher relative priority ratings have been given to testing of 80-octane all-purpose military

gasoline and 73-octane aviation gasoline by Petroleum Administration for War Index. PAW said the 73-octane aviation gasoline is used primarily in military plants. In the relative priority groupings these two important military petroleum products have moved from Group III to Group II, second preference and critical.

Detroit Plant Corp.—Packard Motor Car Co., Detroit, has increased its contract with Detroit Plant Corp., to provide additional equipment at a Detroit plant to cost \$120,000, resulting in an overall commitment of approximately \$2,250,000.

DPC announces an increase in its contract with Republic Aviation Corp., Farmingdale, Long Island to provide additional plant facilities at Farmingdale to cost \$150,000, resulting in an overall commitment of \$12,000,000.

The Budd Wheel Co., Detroit, Mich., has increased its Detroit Plant Corp. contract to provide equipment and machinery at a plant in Detroit approximately \$25,000.



Convair Tests Altitude Chambers. The large two-ton altichamber at Consolidated Vultee's San Diego plant can vary atmospheric pressures from sea level to 10,000 feet and drop temperatures as low as -100 degrees F. Shown above is a perspective view of the interior of the chamber as seen from the operator's table located outside, enabling observation of the movements of all personnel during a "flight." Other view shows Dr. A. R. Sweeney, assistant flight surgeon, observing a test through a heavy glass port. This is a rear view of the altichamber showing the relative size of the compression freezing chamber and a portion of the compressing equipment.



Chamber Simulates 80,000-ft. Altitude

Convair laboratory drops temperature to 100 below zero to simulate flight conditions

A massive ten-ton altichamber now in use at Consolidated Vultee Aircraft's San Diego, Calif., installation, flight conditions—even jagged—as high as 80,000 feet for people and 10 miles for materials.

Through its system of vacuum pumps, refrigerating units, pipes and valves, flight conditions at all levels and in all weather situations can be simulated exactly within the big cylinder in a matter of minutes. One valve will vary atmospheric conditions from sea level to 60,000 feet. Another will drop the temperature to as low as -100 degrees F.

Heavily insulated—The altichamber is 32 feet long and 8 feet in diameter, with steel-welded walls, insulated with nine inches of cork outside and three inches inside. It is used for testing and training flying personnel in use of high-altitude flying equipment, provides facilities for carefully controlled aero-medical research and also is used in the testing of materials, equipment and instruments under the same pressure and temperature

conditions that are encountered in actual flight.

Regular photographic recording equipment captures every word that is spoken during tests in the altichamber.

Verbal Record—Engineer Philip Shaw explained it is to provide a verbal record of anything that might go wrong. Such a record can be used in ascertaining difficulties encountered.

Immediately after each test, the men involved listen to a playback of the recording made while they were in the altichamber. Shaw, who is in charge of the chamber, as a member of the test laboratories, participated in its design and building of the equipment. Dell Fuller is its assistant.

Aero-medical research of Convair was opened by Dr. H. F. Reinhardt, Jr., and recently Dr. A. Randolph Sweeney has become associated with the laboratory. Both men went to Consolidated Vultee from the Mayo Aero Medical Unit, a pioneer group in aeromedical research.

Another member of the group is Margerie Bernier, a veteran of more than 300 "flights" in the chamber, and paradoxically enough, she has done almost no flying in airplanes.

Miss Bernier is one of the few women in the country engaged in high altitude investigation.

Weight Output Up

Aircraft industry production met in preliminary estimates of January plans output set the total at slightly under December's 6,000 in units, although indications are that the total weight for the month—the only exact yardstick—will show an increase.

The emphasis on the heavy bomber program is pointed up in the January production with both the *Laboratory* and *Physic* categories listed, called "excellent," in addition to stepped up output of Superfortresses.

Officials of the War Production Board have said repeatedly that unit production will not show gains and that the emphasis will be on pounds. The so-called "pounds ratio" in aircraft production—unit output—does not give a true picture of the industry's effort and effectiveness in the industry are endeavoring to correct the situation in cooperation with the industry.

Disposal of Vast U. S. Holdings Vital Factor in Post-War Aviation

Industry closely following proposed formulas for reconversion of plants to peacetime basis.

Most important single phase of the broad subject of reconversion—certainly so far as the aircraft industry is concerned—is the pattern for disposing of the vast government holdings in American industry.

When the moment comes for the government to get out of the various businesses into which it was forced by the war, the industries must be faced with a tremendous plant expansion, disposition of which could easily mean life or death to any company.

WPB Reports—The War Production Board has reported that at the end of November, 1945, the last month for which figures had been compiled, the total value of war industrial facilities financed by the government was \$14,500-\$15,000. Of this, facilities valued at \$13,520,000,000 had already been put in place.

The extent that the government has surpassed private industry in contracting facilities is indicated in WPB's report of the value of privately financed industrial expansion as measured by estimated cost of 15,000 certificates of necessity approved as of Nov. 30, 1942. While the government has advanced facilities having a value of \$10,480,320,000, private expansion has totaled only \$4,910,000,000.

Aircraft Facilities Second—Government-financed aircraft facilities scheduled as of Nov. 30, 1942, totaled approximately \$3,195,000,000, of which about \$2,835,000,000 was actually in place. Of the amount scheduled, roughly \$1,400,000,000 was for machinery and equipment, while the remainder, \$1,435,000,000 went for construction.

The fact that aircraft facilities rank second in a listing of the ten major industrial categories, in which the government has interests in all the more means why the aircraft industry should be concerned with disposal plans. When the day for disposal arrives, based on present valuations, only aircraft plants will exceed aircraft in value.

Military Secret—How the aircraft plants are divided by agency is still a military secret so far as any

formal announcement is concerned, although it is generally known that Army Air Force plants far exceed those of the Navy Bureau of Aeronautics in value.

How much 1944 will add to the aircraft industry is also an unknown factor, but it has been announced that new authorizations



UPENDED FUSELAGE

Fairchild Engine and Airplane Corp. plant at Burlington, turning out this Fairchild Grouser, utilized the striking method of working on the forward end of the rear section of the fuselage.

For plant expansion are becoming effective and that there will be substantial activity at least during the first quarter. The value of construction and machinery and equipment contained in the aircraft category declined consistently during each of the four quarters of

1943, with the rates approximating \$228,000,000, \$188,000,000, \$189,000,000, and \$186,000,000.

Questions—At any rate, there is already a tremendous aircraft plant owned by the government, and it is getting larger every day. Among questions to be decided before disposal begins are these fundamental:

Will the plants be disposed of in such a way as to encourage post-war competition within industry? Will facilities be disposed of in smaller plants and thus put them in a position to compete with large companies?

Will the large producers be made larger, thus agitating the smaller companies? In addition to these questions, there will be others growing out of the disposition of aircraft component plants and aircraft assembly and maintenance plants. Since many of the latter type will have a glancing post-war outlook, an entirely different pattern of treatment may be needed in their disposal.

One thing seems certain and that is that the aircraft industry will be treated with the same formula devised for all industry. With a problem as staggering, it would be impossible for each industry to be dealt with individually.

Senate Group to Report—Some light probably will be thrown on the disposal picture this week when the Senate's Special Committee on Post-war Economic Planning and Policy Committee issues its report. This report, which is expected to outline the framework for legislation on the subject of disposal, will deal with all aspects of industrial demobilization. Like the Murray Bill for contract termina-

tion, the legislation on the broader aspects of demobilization is expected to provide for a central demobilization unit which would operate through existing agencies.

Considerable interest is attached to the Senate Committee's forthcoming report, since it is said to have approval of all four Committees working on the question and undoubtedly will resemble whatever formula or pattern is finally accepted.

House Sweeps Into Step—Meanwhile the House of Representatives swung into step with the Senate, as Rep. Canner set about to organize his Post-war Economic Planning and Policy Committee. The question of disposal of facilities also will be studied by the Canner group and an effort will be made to reconcile their findings with that of the parallel Senate Committee.

N. Y. CAP to Meet

Group staffs of the New York wing of the Civil Air Patrol will hold their winter meeting at Rochester, N. Y., Feb. 26 and 27, with Col. Earle Johnson, A. C., national commander of the CAP, and his staff as guests.

Discussions will deal with present problems and future plans, and CAP responsibility in connection with airplanes and equipment recently placed at its disposal by the Army Air Forces to aid in AAF recruiting work.

Wing commanders and staffs from other states will attend the meeting, which will be open to all members of the Civil Air Patrol organization.

William B. Mayo Ford Aide, Dies

Chief engineer was responsible for motor magneto's entrance into aviation.

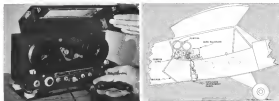
William B. Mayo, former chief engineer of the Ford Motor Co., and the man largely responsible for Henry Ford's entry into the aircraft industry, died last week in Henry Ford Hospital, Detroit. He was 78 years old.

Mr. Mayo joined the Ford organization in 1913, his first task being the construction of the power plant building for the Highland Park plant. After that, he constructed the River Rouge works, set up various assembly plants throughout the United States, electrified the Ford railroad and invented extensively in connection with various manufacturing processes in which the company was interested.

Studied Aviation in Europe—In 1920, at Ford's request, he went to Europe to study the aircraft industry there and on his return advised Ford to open an airplane factory in Detroit.

Mr. Mayo was an organizing director of the American Sports Corp. in 1921 and was active in aviation affairs. In 1932 he was chairman of the Board of Control of the National Aircraft show at Detroit. He also had been vice-president of Stoddard Motor Airplane Co. and a director of United Aircraft Corp.

Urged Air Defense—He was president of the Detroit Aviation Society and had been a member of the National Aeronautics Association Committee on awards.



FIRST INSTRUCTIONAL USE OF WIRE RECORDER:

Civil Aerobatics' demonstration is making limited use of this wire recording device to study instruction-student conversations in training planes. General use will be delayed because of military orders. Navy has used the machine in its own classrooms and the AAF has employed it to bring back records of battle

experiences and fighter conversations, but CAA believes its own use was the first application of the recorder to instructional study in any country. Its program also includes duplicate instrument panel photographs made in flight. The drawing shows arrangement of camera and recorder in the plane.

Efficiency of Plane Industry Amazes House Inspection Group

Report of Military Affairs Subcommittee reveals "remarkable progress" of industry in production, design and training during last few years.

A Congressional Committee which has just completed an extensive survey of Army air installations, including aircraft manufacturing plants, has submitted a statement loaded with statistics that the industry in a revolution that "the report we give is an optimistic one. The overall picture as we have seen it is good."

At a time when many government spokesmen, both civil and military, are warning that the entire war effort may fail, if industry—particularly the aircraft industry—does not come through wartime observers in Washington took heart from a statement by a House Military Affairs subcommittee that "the progress that has been made during the past few years is remarkable. This applies to production, to design and to training—

many was so thorough and covered so much ground, have given it added importance.

Chairman of this subcommittee is Rep. John J. Sparkman, of Alabama, whose interest in aviation is genuine and profound and who, while critically fair, shows an understanding of the problems of the industry. Other members on the team, which Sparkman emphasized was not an investigation but an inspection, were Rep. Thompson, of Texas, Rep. Kilgley, of Texas; Rep. Cannon, of Mississippi; Rep. Martin, of Iowa; Rep. Eklund, of Ohio. Accompanying efforts from the War Department were Lt. Col. Robert H. Thompson and Lt. Col. George H. Lane, both of the General Staff.

All on Schedule—Among the items noted in the report of particular significance to the industry was the comment that "the fact that every plant we visited is on schedule in turning out the finished plane speaks well for the manner in which the work has been organized and production maintained with a steady flow."

The report noted that these

changes with the responsibility of designing the best planes possible have resulted from the experience gained by the use of the planes in actual combat and "there has been no hesitancy in making changes when combat experience has shown them to be necessary or desirable."

Last Word in Planes—Speaking of new models produced by the aircraft industry, the report expressed amazement at the work done, saying that virtually every new plane that goes into service is the last word in that category of combat plane. "We are hardly more than reassured by its performance when new and improved models of the same type are out, and before long that type goes in first position to meet new plane designed to do the same job more effectively," the report added.

It emphasizes that these new planes are not the product of the moment, but that "they require months and years to design, build, test and bring to completion," a situation which Sparkman's committee understands, but which is not understood by untrained critics of the industry.

New Models—The announcements of these new models from time to time indicate the continuous work toward improvement of our fighting planes," the report says. "We may be assured that careful research, study and experimentation will continue at all times and serve to give our fighting forces the very best in air equipment."



NOSE-LOADING PLYWOOD CURTIS "CARAVAN"

Two new units of the Curtiss Caravan C-16, on which composite were installed some months ago after about 20 had been built, largely of plywood. These craft

are still in use, however, under experimental load-carrying and have shown that plywood can stand itself as considerable additional cargo space.

THE AIR WAR

COMMENTARY

Rome Landings Show Cost to Nazis Of Lack of Air Reconnaissance

Allies planned fields near Italian capital, making enemy's use of observation planes impossible before surprise landing behind German lines.

After breaking the line by frontal assault in southern Italy for some 30 weeks, a sudden end run brought Allied invasion forces within 30 miles south of Rome in a surprise move which may well break the stalemate of the Italian campaign. Surprise is the most deadly of all weapons. It is effected by doing the unexpected and thereby creating a situation for which the enemy is unprepared.

Surprise can be secured by concealing preparation, by disguising the intention or by the rapidity of execution. It may take the form of time, place or direction of blow, amount of force employed or type of tactics used. If surprise is secured, it must be followed up effectively or disaster will result.

General Wilson's Statement:—Gen. Sir Henry M. Wilson, Allied Commander in Chief of the Medi-

terranean theater, told the Germans, because of the surprise of the landings, "were not in a position to attack our beachhead during the first 48 hours, thereby giving us time to get ashore support weapons." This was due almost entirely to the action of the air force, which by attacking the enemy's airports in the Rome area, disrupted his means of reconnaissance and threw them out of gear at the crucial time when the convoys were leaving and proceeding northward up the beaches.

"No enemy aircraft came over," Wilson continued to Salerno. "For many days after the landing most of the German planes encountered were not bombers or fighters, but reconnaissance planes."

Air Reconnaissance: Vital—Up-to-the-minute knowledge of the enemy's movements, position and strength is of the essence of military intelligence. During the first World War the ability of the "aero-planes" to see over the next hill paid off what the enemy was up to, and in general to greatly enhance the scope of intelligence in time, distance and speed, was widely hailed as its most valuable contribution to warfare. Although not often in the news, except as having taken photographs vividly depicting the damage done to military objectives by bombing planes, air reconnaissance is still an extremely vital function.

Putting Out the Enemy's Eyes: Moreover, it works both ways. Not only do we need to know the enemy's plans, but we must keep him from learning ours. Before the surprise landing at Nettuno, Allied bombers and fighter-bombers of Gen. Baker's Mediterranean Allied Air Force carried out smokescreen attacks on half a dozen important fighter airfields in the Rome area, and to the east and northeast at Avezzano, Aquila and Frosinone, as well as the fighter fields near the actual landing area, such as Littoria and Frosinone.

It is from some of these fields that the fast German reconnaissance planes operate, and their complete neutralization was one of the big factors in the surprise landing. This was almost an exact duplication of a similar operation last April whereby a concentration of attacks on airfields by the Tactical Air Force kept enemy fighters and reconnaissance aircraft out of the skies, enabling General Montgomery to spend a surprise which breached the Munich Line.

An Example from the Russian Front:—In modern air reconnais-



HE'S FINDING OUT HOW TIRES GROW ...TO IMPROVE AIRPLANE DESIGN

It has long been known that tires tend to grow in radius as a result of centrifugal force, affecting the amount of clearance needed between a tire and its landing gear strut. But how much do they grow? This fact is important to designers of today's faster-landing aircraft.

B. F. Goodrich engineers set out to actually measure tire growth. They used a tire-testing machine which accurately simulates take-offs at speeds up to 140 mph. A telescopic sight with a hairline

rule was focused on a fixed point on the tire's circumference, and the take-off speed was varied from 140 mph down to 0 mph. Several sizes of tires were tested and carefully measured at these speeds.

Our engineers discovered that tire growth varied only with the speed, and very little with the size of the tire tested.

In other words, at the same speed, a

36" and a 56" smooth runway tire grow about the same amount.

Facts gained this way are of material help in designing landing gear and tires that will afford maximum safety for modern aircraft.



Today, all our research and production facilities are geared to total war. Tomorrow, the "know how" we've gained now will help bring you a world of safer flight. The B. F. Goodrich Co., Aeronautical Division, Akron, O.

MAKERS OF MORE THAN 80 RUBBER AND SYNTHETIC RUBBER AVIATION PRODUCTS



UNPACKING INCENDIARIES FOR JAPS:

Carrier crewmen are pictured here unpacking incendiary bombs and, in background, loading them aboard planes which a short time later sailed for and destroyed on Jap-held Tarawa in the Gilbert Islands.

more, speed is of the essence. The British use special versions of the Spitfire and Mustang, and the Army Air Force's P-48 is a photographic model of the Lockheed Lightning. The Germans depend on extreme altitude as well as speed for taking their photos and getting back safely, using special versions of the JU-88 and other fast high altitude planes. The Germans maintain the most complete possible air reconnaissance over the entire battle area, in all kinds of weather, using special models of their best fighters and bombers.

On a certain vital sector it was foreseen that the Germans would use tanks for a breakthrough. Aerial photography indicated no tanks to a depth of ten miles behind the front line. Reconnaissance pilots in Pe-2 dive-bombers (a size roughly corresponding to the JU-88) scouted the railway traffic deep in the enemy rear.

Picking up the secret it was finally discovered that six freight trains laden with tanks were being unladen at a certain station and making off for a concentration site. Enemy anti-tank artillery and fighter planes were spotted in the district where the tanks were con-

Cannon Heads 12th

Announcement that Maj. Gen. John K. Cannon has been appointed commanding general of the United States 12th Air Force, leaves only one top position to be announced among the three U. S. air forces. In the Jan. 17 issue of AVIATION News, an air brochure showed the both commanders of the Pacific and Ninth Air Forces yet to be announced.

Cannon also will serve as commander of the tactical air force, which is composed of American and British units operating with 1st Lt. Gen. Mark W. Clark's 5th Army and the British 8th Army. The 12th Air Force is based in North-west Africa.

concentrated in the woods. Short-range low altitude reconnaissance revealed the exact position and characteristics were dropped. The tanks came crawling out, and the Pe-2s, now equipped as dive bombers, dealt them a crushing blow. The German break-through failed to come off.

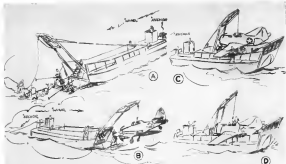
► Strategic Bombing Army—In the sphere of strategic bombardment, photographic reconnaissance is like an indispensable ally. The all-air victory of Ravenna would have been impossible without it. The selection of industrial and communication targets and accurate assessment of damage is dependent on eyes from the air. "The nation with the best air reconnaissance will win the next war." This statement by a high-ranking German officer, made half a dozen years ago, is well on the way to final proof.

—NAVIGATOR

Safety Record Hailed

Commercial airlines have been praised by the Civil Aeronautics Board for their 1943 safety record. CAB figures showed that the average of approximately 1.4 passenger fatalities for every 100 million passenger-miles flown was lowest since 1930, when the average was down to 1.2.

The 18 domestic passenger-carrying lines flew about 1,850,000,000 passenger-miles last year, the Board said, or about 900 million more than in 1939.



HIGGINS PROPOSES SPECIAL AIRCRAFT SALVAGE BARGE

Higgins Industries, Inc., which is producing landing barges for the Navy, has proposed construction of a special vessel, which can salvage aircraft quickly from the sea. Three concept drawings indicate the

stages in the operation. Officials believe the barge would have important post-war possibilities in civil aviation. Some preliminary tests already have been made, by permission of the Navy Department.

PERSONNEL

W. Paul Eddy, Jr. (photo), has been appointed as national manager of Pratt and Whitney Aircraft division, United Aircraft Corp., by its headquarters.



W. Paul Eddy, Jr. (photo), has been appointed as national manager of Pratt and Whitney Aircraft division, United Aircraft Corp., by its headquarters.

Paul Eddy, public relations director of Kaiser Corp., Inc., Hawthorne division, has been granted a leave of absence to join the Navy, as an aviator. During his absence Eddy will be a member of the public relations department, will handle public relations for the company.

Richard W. Cane has been named assistant general traffic manager of J. P. Goodrich Co.

H. W. Cowles has been appointed assistant chief superintendent of maintenance for Transcontinental and Western Air, Inc., with headquarters in Kansas City. He has been on a special assignment in TWA's modification center in Kansas City. Other maintenance department personnel changes include: V. A. Bush, well-known supervisor of service, to supervisor of overhaul; W. F. Babcock, formerly supervisor of overhaul, to staff assistant; F. T. Hall, supervisor of service, to K. K. Key, foreman of maintenance service, all at Kansas City; and G. A. Peters, transferred to Burbank, Calif., as maintenance foreman.

Danilo Clemente Frey, of Argentina, who has been in the United States under the auspices of the American Aviation Training Program, has left for Buenos Aires.

Col. Yusef Saad, former representative of the Brazilian Air Force on the joint Brazilian-United States Defense Committee, has arrived in Washington from Italy.

Gen. F. Shogshin, traffic manager of the Nakhichev division of Consolidated Valer Aircraft Corp., has been elected chairman of the civil and commercial committee of the Central Region of the Aeronautical Chamber of Commerce. Harold Huggins, chief project engineer of Nashville division of Corvair, has been assigned to Street Research division.

Philip Walsh, production manager for General Motors, has returned from a trip to Buenos Aires.

W. H. Smith has been named Sperry's right operations superintendent at research laboratories, according to G. E. Smith, who becomes liaison supervisor of these laboratories.

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Paul L. Robert H. McGee, formerly AAF intelligence officer in the Hollywood, Calif., area, has been assigned to the same duty in the San Diego area. McGee succeeds Capt. W. L. Sales, recently promoted to intelligence officer for the central processing district with headquarters in Detroit.

E. R. Winkley, assistant chief inspector of Kellitt Aircraft, has been named executive sales representative on the West Coast. S. A. Decker replaces Winkley.

W. V. Erikson, general manager of Plant 5, of Kellitt Aircraft, has been appointed assistant in factory manager. W. L. Schneider.

La. Col. John B. Jones, USMCR, has been reassigned after serving with the engineering division of the Bureau of Aeronautics.

Comdr. John B. Brown, Jr., has reported to the Aviation Training division of the Bureau of Aeronautics.

Kearney Carr has transferred from



PAN AMERICAN EXECUTIVE HONOURED

John T. Tripp, left, president of Pan American Airways System, is pictured presenting Atlantic Division Manager John C. Leslie with 15-year service pin at a luncheon at the Cloud Club. Leslie has worked in many capacities for Pan Am. He helped to organize the Trans-Pacific Division, which possessed aircraft from the U. S. to Australia and the Orient. He was technical advisor in charge of the historic flight of President Roosevelt to Africa for the Casablanca Conference.

[illegible]

Keywords: Links to Link for more
in engineering and high speed
links of manufacturing Tool for
the same LINK on previous
analysis after the year.

[illegible]

When the president's address was over, the crowd broke into a noisy discussion. A student from the University of California at Berkeley asked the speaker, "What would you do to get the people to stop using nuclear weapons?" The speaker replied, "I would like to see the people of the world stop using nuclear weapons. I would like to see the people of the world stop using nuclear weapons. I would like to see the people of the world stop using nuclear weapons."

More bombs on target... planes home!

While the tank was to... planes home!



More bombs on target...
planes home!

While the task was to...
 ...one of the...
 ...

**More bombs on target...
planes home!**

More bombs on target...
planes home!

[illegible]

★ ★
Kernco links in Link for even
more engineering and high speed
side of manufacture Link for
the same Link, an precision
machines after the war.

...engineering and high speed
...of manufacture. Look for
...de some work on process
...models after the year...

Walter Field to become supervisor of equipment removal at Cornhusker Post World division.

A group of Civil Air Force men and officers accompanied by Major Cassman from Harvard to attend a course in technical training at the Embury Radio School of Aviation in Miami.

Charles Cowles, president of the Des Moines Register and Tribune, was elected a director at United Air Lines to take the place of Joseph P. Butler, who recently resigned so that Matthews, Hagley & Co., with which he is associated, might handle United's new financing plan. In addition to holding the Des Moines newspaper, Mr. Cowles is vice-president of the Minneapolis Star Journal and Tribune Co., president of Look Magazine, the Iowa Broadcasting Co., the South Dakota Broadcasting Co., and Goodson

Russell H. Busch (below), president of Atlantic Paper Machinery Co. of Hoboken, has been elected a director.

A newly organized department of American Airlines, Operations Research, will be headed by Capt. Max, former director of flight operations. The work handled by this department will extend study and analysis of operating procedures and techniques of the industry, and of American Airlines in particular. He is succeeded as director of flight operations by W. W. Bennett, chief of flying, who, in turn, is succeeded by W. H. Hudson, company pilot. H. Voller was named operations manager, a newly created position to expedite production. He will supervise all operations departments, including communications, maintenance and overhaul, flight operations, station operations, airports and airports. During 18 years with American, Miller has been station manager, division supervisor, flight superintendent and assistant director of flight operations.



Russell H. Busch



Standard Oil Co. of Pa., and was one of the youngest directors and personnel managers of the Raynham refinery for Standard Oil of New Jersey. In his spare moments, Mr. Heston, through

AVIATION NEWS • February 7, 1944 21

Edmund F. Royd, former public relations specialist with Pan American Airways and Cebuana Air Lines Bureau of American Airlines and members of a new advertising and public relations organization, Royd and St. Guzman, located in New York City.

George Johnson, recently company war socialist representative in Washington, and chairman of industrial control committee of Automobiles General for War Production, has been named as a director of the board of Stashelberg Corp.

AVIATION NEWS • February 7, 1946 21

Cowles Foundation
Lt. Col Edward C. Parker, USMCR, has been detached from duty in the Cowles Foundation division of the Navy's Bureau of Aeronautics.

Canada
Samuel G. Mitchell, USN, has been detached from duty in the Flight Training Section of the Bureau of Aeronautics.

U. S. Revenue Bibles, publisher of the Chicago investment firm of Kiskadee, McCannick and Co., has been elected to the board of directors of Chicago and Southern Air Lines, Inc.

Major Emily Runkel, Air officer of the Women's Army Corps, now supervising installations in foreign theaters, has been promoted to lieutenant colonel. She was the first WAC to attain the rank of major and has

Reynold H. Branch
rector of Fairchild Engine and Airplane Corp. Branch and J. Earl Johnson, a director of the firm, also were elected to the executive committee.

Carroll E. Franks has been made director of a newly established industrial relations department of Boeing Aircraft Co. In the type of work for the past 21 years, Branch will direct these activities at the Seattle and Renton divisions of the company and will act in an advisory capacity for the Waukegan and Vancouver, B. C., divisions. Most recently, Franks has been a staff member at Industrial Relations Commission, U. S., as chief of survey and consulting, and has made industrial surveys for several aircraft firms as well as several companies. He was previously director of industrial relations for Colonial Broom Oil Co. and the

Right operations.
Herald Polak, of Carrier's San Diego division, has become assistant chief industrial engineer at the Port Worth division. Dick Jevons has gone to Port Worth as supervisor of operating controls, a post formerly held by J. M. Clark, newly named chief assistant.

W. F. Finley has been appointed assistant manager of the Renton div-



NEW ENTRY BANKS. An officer of the Western Army Group now inspecting stations in foreign theaters, has been promoted to lieutenant colonel. She was the first WAC to attain the rank of major and her



Horn T. Parsons has been appointed administrative assistant to C. F. B. Kuhl, vice-president of Aerospace

Edmund F. Royd, former public relations specialist with Pan American Airways and Cebuana Air Lines Bureau of American Airlines and members of a new advertising and public relations organization, Royd and St. Guzman, located in New York City.

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Move to End 18-25 Deferments Poses New Problem for Industry

Country confronted with choice of men or bombers, leaders declare; want of too great drain on plane plant manpower.

By SCOTT HERSHEY

The aircraft industry is vitally affected by the recent enactment of Selective Service policy to end all deferments for the 18-to-25-year-old group, of which there are large numbers in the engineering and technical departments of the industry.

The remarks of Maj. Gen. Lewis B. Hershey regarding the manpower situation make it plain that approximately 800,000 men must be delivered to the armed forces in the first three months of this year and then possibly look to serve 2,000,000 reservists deferred by reason of their occupation in war production or in support of the war effort.

Repercussions—This does not mean all these men are in aircraft plants but, because aircraft work has had a high priority in deferments, it follows that there is a possibility of repercussions in the industry.

In industry circles, it is not believed manpower requirements of the armed services—pointed up by the coming invasion of Europe—will affect the aircraft industry to any great extent except possibly in the 18-to-25-year-old class.

There is a distinct doubt, however, that the occupational deferment line can be held on the 18-25-year-olds if the demands of the armed services continue and if old-

er men with families are being drafted.

Boards Reluctant—Local draft boards are reluctant to leave young, single men deferred in positions in industry—and agriculture—and to induct in their place men who have established family responsibility.

The answer must lie, in the opinion of Selective Service, that unless the skill, experience, and responsibility of the young registrant is as great as to thoroughly convince reasonable judgment that the individual should remain at home and a father should go to war in his place, then his occupational deferment can not be justified.

Proved Reluctant—This means that the aircraft industry, which heretofore has generally asked for deferments on the simple grounds that a man is essential or can not be replaced, must now back up their request with definite and strong evidence.

The industry has been under pressure for some time on the replacement program—urged to find a replacement for a young, single man working on an essential job—but the situation actually has been that the "replacement" is also needed as a front-line production job.

Men or Airplanes—Aircraft industry and government alike now believe that Gen. Hershey's most recent remarks are unlike some of the others that have come from government, which were the off-again, on-again type, or rather good today and bad tomorrow situation. There is an increasing trend or tendency to reach into industry for men.

The natural reaction of aircraft manufacturers is to inquire whether the armed forces want men or airplanes, but that is over-simplification. They have to have both and there is a definite indication that they are going to get them.

Problem—The Selective Service problem is the top problem of the country at the moment and probably will continue to be for some months. There are underground rumblings in Congress about industry deferments for young, single men, as married constituents with families are drafted and go into the Army or Navy. The aircraft companies, particularly on the West Coast, have a tough problem on their hands in trying to explain to their constituents why a 22-year-old technician is more important to the over-all war effort than the engineering department



RIVETS FOR MARTIN 'MARENNERS':

Some 23,000 rivets are driven into every 26-foot-long horizontal rib that Martin's bombers, the Maritimers. To prevent the aluminum skin from being drawn out of place by riveting guns, sheet metal clamps hold the covering tight to the framework until the riveters work up to the clamps. Such precautions enable the worker shown here to produce work that equals in the tensile strength of an inch.

AIR POWER THROUGH

McQUAY-NORRIS
ALTIMIZED
PISTON RINGS

PISTONS...PINS...

HARDENED AND GROUND PARTS

Every McQuay-Norris part in modern airplane motors is backed by 34 years of experience and progress in precision manufacture. Today the world's largest makers of aircraft motors are availing themselves of our broad background of metallurgical development, heat treating, clinical research and engineering design. Your inquiries are invited.

PISTON RINGS

PARTS FOR AIRCRAFT ENGINES

Piston Rings
Oil Sealing Rings
Superheating Stops
Cushioning Pins
Mechanical Aluminum Parts

Counterweight Check Pins
Mechanical Aluminum Parts
Cylinder Wall Down Pins
Hollowed and Ground Parts

PARTS FOR PROPELLER ASSEMBLY

Mechanical Aluminum Parts
Piston Rings

EQUIPMENT FOR MAINTENANCE OF AIRCRAFT

Timing for Cylinders
Compression
Piston Rings for Cylinders
Pins for Air Compressor
Pins for Air Compressor
Pins for Air Compressor

LANDING GEAR PARTS

Mechanical Aluminum Parts
Piston Rings
Hollowed and Ground Parts

PRECISION WORKERS IN IRON, STEEL, ALUMINUM, BRONZE, MAGNESIUM



McQUAY-NORRIS MFG. CO. (AIRCRAFT DIVISION), ST. LOUIS, U. S. A.
CANADIAN PLANT, TORONTO, ONTARIO

than as would be in the Army.

Agricultural deferments have been larger and of selective Service dips into the farm worker pool to meet its quotas, it will be increasingly difficult for industry to keep their 15-35-year-olds.

\$1,669,689 Available—The man-power pool available to Selective Service, consisting of men between 18 and 30, contains approximately 12,000,000 registrants. Of this pool, services over 3,500,500 have been inducted or reduced in the armed services, over 3,583,646 have been found physically or mentally disqualified for military service, and 346,000 not available for induction by reason of conscientious objections, family hardship, minority or deferment or exemption for other reasons. Thus the pool is sharply reduced to 3,580,000 registrants.

Of this group, approximately 1,669,689 are now in a class available for military service and from this group Selective Service expects to induct not more than 993,689. The remaining pool is then down to 3,580,000 and of course there is no source of supply in that currently becoming 18 years of age, of which there are about 80,000 per month. Registering has shown, however, that only about 30,000 of these can be inducted.

\$390,000 To Be Called—Figuring that about 360,000 of this group will be drafted during the six-month period, the unaccounted-for

Budd Ships to Navy

An unaccounted member of the new station steel Budd transports, the BB-135, is seen to be assigned by the Naval Air Transport Service, it was learned in the report of KATS operations compiled by the Office of War Information.

This distinctive-looking plane has recently been assigned in test flights and was observed landing and taking off at Washington's National Airport. A business case and high tail mark the craft.

A drawing of this airplane appeared in *Aviation News* last August with the comment that it was a revolutionary design for a high-efficiency cargo plane with the indication that it would be coming off the assembly lines of Fairchild G Budd Manufacturing Co. by the end of 1942. Given thought at that time was at an about 30,000 pounds. Number to be tapped out has not been announced.

registrants are down to approximately 700,000. The balance of the pool of 3,230,000 consists of 3,900,000 registrants in Class A-A, who were previously deferred by reason of dependency, 2,000,000 deferred by reason of occupation and 1,700,000 deferred because of agricultural occupations. Where the pinch

will come on the aircraft industry is obvious when these figures are analyzed.

The dependency deferments are almost entirely pre-Pearl Harbor fathers and these registrants are, for the most part, of the older age groups in which there will be a higher rate of rejection on physical grounds.

Experience Factor—In addition, and affecting the aircraft industry directly, a larger percentage of these registrants has acquired of occupational skills through long experience and will be considered for deferment as necessary men in industry.

As the war time, a great many younger men have acquired technical skills and experience, so that their loss would be serious to aircraft production.

Selective Service is cognizant of this situation, however, and there is a strong feeling in Washington that it will be worked out. Meanwhile, there is a possibility of a definite effect on the aircraft industry, which already has performed a production miracle and is going to have to continue to do it, even as the face of the record-breaking 1944 schedule.

Airframe Production Shows Weight Gain

December production output holds at November level

The output of airplanes last month was at the same level as in November and maintenance of the November production level was accounted for primarily by the fact that airplanes were up five percent by weight (a total of 2,882 planes).

This was disclosed in the official monthly report issued by Donald M. Nelson, chairman of the War Production Board, who noted that maximum production for 1943 was more than 60 percent above the 1942 total. Biggest increases in dollar value were in segments of the production program which are still expanding, with airplanes an outstanding example, being up more than 10 percent above 1942.

Planes December—Up 15 percent by weight over the November figure, planes in December constituted, as in recent months, to dominate the aircraft picture. Future months will similarly be featured by what happens in the aircraft group.

Nelson's report, counting up production, noted as previously as-



"HELL CAT" STIRS UP AN AURORE

Fueled for a takeoff from a carrier, this Graco Hawk illustrates pathos about itself as "zero" caused by the motion of its propellers. Rapid change of pressure and consequent drop in temperature, must pre-

vented at the time of the prop's three blades, create a non-reversible of pressure. Rotating in air and the blades, the "hell" moves off, giving depth and perspective to the phenomenon.

vented that the aircraft industry produced 25,819 airplanes of all types, compared with a total output of 47,357 planes in 1942.

Heavy Types Gain—Concurrent with this 89 percent increase of production in terms of numbers, the proportion of heavy combat types rose to the extent that airplane production by weight—the only true yardstick—(inclusive of spare parts) increased by 157 percent, from 35,000,000 pounds monthly at the start of 1943 to 84,000,000 pounds in December. The 35,819 planes turned out in 1943 were the equivalent of 123,900 planes of the 1942 type, and the more than 100,000 planes due to be made during 1943 will be the equivalent of about 167,000 of the earlier types.

True Picture—These figures disclosed in Nelson's report give the true picture of the aircraft industry's contribution to the total war production effort.

December production rate, in terms of airplane weight, will have to be increased about 20 percent, exclusive of spare parts, etc., in order to meet the 1944 goals. The 1944 program, as previously noted, calls for more than 100,000 airplanes, with emphasis on the heavier types.

Weight Gains to Continue—Thus, with the increased production of the heavier bombers of the B-24 type, and the introduction of other

new and high-performance types there will be a general leveling off of production in numbers, but production of aircraft by weight will continue on the upward.

Aircraft, including spares, parts, etc., will represent an expanding program—to go up more than 50 percent in 1944 over the 1943 total.

Corsair Output Soars

Production of Corsair fighters for the Navy equaled or exceeded production of any other aircraft in 1943 except February, according to Rex B. Beall, general manager, Chance Vought division of United Aircraft.

Beall reported output during the second half of the year came within a few planes of doubling the total for the first six months and that the rate of production increase for last year was over the national average of two and one-half times the 1943 output, with a total of approximately 2,900.

Gear Firm Perfects New Actuator

A multiple gear reduction torque shaft aircraft actuator has been developed by the Western Gear Works, Pacific Gear plant, designed for extension and retraction of wing flaps, landing gears, landing

gear doors, nose wheels and doors, bomb bay doors or similar applications.

The actuator weighs about 37 pounds, yet has an adjustable maximum slip torque capacity up to 600-inch pounds in a 17.78 inches long, 5 inches wide and 3 1/2 inches high. It has an output speed of 110 rpm at 573-inch pounds. An externally adjustable clutch guards against overspeed. A General Electric motor is used.

General Acquires Tennessee Aircraft

Adds aluminum alloy fabricating unit to large glider facilities.

General Aircraft Corp., production producer of Skylander aircraft, and currently one of the largest manufacturers of gliders for the Army Air Forces, has acquired Tennessee Aircraft Co., of Nashville, Tenn.

B. J. Maynard Jr., general president, said Lewis E. Reuter, president of the Tennessee firm, will remain an complete change of its large subcontracting business Maynard added that acquisition of this company rounds out General Aircraft's operations by adding an established aluminum alloy fabricating unit to its already large glider manufacturing facilities.



CONVAIR'S UNPUBLISHED PRODUCTION LINE:

Lake a missouri factory assembly line is the Model Shop at Consolidated Valley Aircraft Corp.'s Downey, Calif., plant, where models of Convair planes, expert men to scale machine guns and carefully formed plastic gliders, are constructed for engineering use. Harney and Howard Downey, twins who built the models, put finishing touches on two of the planes. Planes shown are Navy versions of the Liberator.

NOW A DOT OF SILVER...

Increases tube capabilities at 125-mc by more than 20 times!

The new coating of silver around the grid leads of Gammatron tubes answers one of the most baffling problems in high-frequency communication.

Used W.G. Wagner, chief engineer of Heintz and Kaufman Ltd. hit upon this simple solution, the life of all transmitting tubes at high frequencies was relatively short. Even tubes such as the HK-35 lasted only a brief 50 to 100 hours at 125 mc per cycle when very heavily loaded. The trouble was always the same...the glass around the grid lead would crack, and the tube would be ruined.

Heintz and Kaufman engineers found that the grid lead crack was caused by a change in composition of the glass adjacent to the tungsten. This change was due to a minute current flow resulting in electrolysis.

The silver coating now intercepts this current far

enough away from the grid lead so that the glass immediately surrounding the lead retains its original characteristics. Thus Heintz and Kaufman's patented coating enables such tubes as the HK-34, HK-354, and HK-454 to operate at high frequencies at higher powers for as long as 2000 hours—one Gammatron now outlasts 20 to 40 ordinary tubes without the silver dot!

HEINTZ AND KAUFMAN LTD.
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Gammatron Tubes

Russell Warns Aircraft Industry Of Heavier Army, Navy Demands

President of AMA says ultimate result of war puts squarely on the shoulders of manufacturers; cites production needs to date.

Frank H. Russell, president of the Aircraft Manufacturers Association, warns in his annual report that the war is still far from being won and adds that "we must constantly remember that the primary burden still rests squarely upon the aircraft industry and the ultimate result will depend upon the unflinching completion of the aviation program in the United States."

"We can take pride, however," he says, "in the realization that the single greatest accomplishment which has brought this country and our Allies so far on our way to final victory has been the tenacity with which our manufacturers have adhered to far-sighted production schedules and the maintenance of supremacy in the quality of our products through persistent leadership in basic research and design of our combat equipment."

15 Models Excel—Russell reported that of 22 types of airplanes now in service, at least 15 different models designed and built in this country have been acknowledged to excel all others in their respective categories.

"Never before has the art of aviation made so much progress," he said, "and though it all, the most advanced ideas have been made available to all manufacturers through this Association. The sound principles underlying our cross-licensing agreement have been clearly demonstrated."

No Patent Fights—Russell noted that there has been no wasteful litigation or delay due to injurious controversy over patents in the aircraft industry "and it is now inevitable that our leadership in all types of military aircraft will be continued until our mission has been defeated." Mr. Russell is the father of Frank F. Russell, manager of the National Aircraft War Production Council.

Samuel S. Bradley, general managing executive of the Association since 1917, was re-elected Chairman of the Board at the Association's recent annual meeting. Bradley, an aviation pioneer and highly regarded throughout the industry, has been the moving

and guiding spirit, with Russell, of the Association which administers the patent cross-licensing agreement for the aircraft industry in the United States.

Russell Re-elected—In addition to Bradley, the Association re-elected Russell its president, and John A. Barbieri was re-elected general manager.

Members of the Association reported 295 patents relating to aircraft during 1943 with a total of 1,454 patents has been brought under the operation of the cross-licensing agreement to date.

Confidence—Looking ahead, Russell said he had no hesitancy in prophesying "that the same principles which have served as a guide and an inspiration to our manufacturers through this difficult struggle will again carry us on through the period of readjustment

into a corresponding position of world leadership in the field of commercial aviation after the present hostilities have been ended."

The following vice-presidents of the Association were elected: Clayton F. Brubaker, Waco Aircraft; Robert E. Gross, Lockheed Aircraft; Joseph T. Harrison, Glenn L. Martin Co.; J. R. Kindsberger, North American Aviation; John M. Raper, Douglas Aircraft; Raymond S. Pruitt, Consolidated Vultee and Baycraft; Walsh, United Aircraft Corp.; James P. Murray, of Boeing, was re-elected secretary, and William E. Volk, Curtiss-Wright and Wright Aeronautical Corp., was elected treasurer.

Directorate—The new Board of Directors of the Association for 1944, in addition to Bradley and Russell, are: Alexander T. Barrow, North American; Charles H. Chaffield, United Aircraft; Frank N. Fleming, Douglas Aircraft; G. Burner Ireland, Lockheed Aircraft; George D. Jones, Glenn L. Martin Co.; Charles Knappley, Grumman Aircraft Engineering Corp.; James F. Murray, Boeing; Raymond S. Pruitt, Consolidated Vultee; William E. Volk, Curtiss-Wright and Ray P. Whitman, Bell Aircraft.



LOCKHEED'S MOCK-UP PANEL:

Transitional training of future P-51 and B-27 pilots has been simplified by a new type of instrument panel mock-up recently developed by Lockheed Aircraft Corp. for Army and Navy training centers. It is built to a scale of three-to-one. Instrument dials are colored photographs of throttles and engine controls are colored, readable versions of those on the planes. The panel serves as a classroom device. Lt. Cmdr J. O. Chouinard and Max Short, Lockheed vice-president in charge of engineering, check with Max Short, assistant to the vice-president—sales.

CAB Reveals Data on Survey Of Air Needs in Caribbean

Report of F. H. Cronier's Research and Analysis Division shows need for well-planned coverage with U. S. air routes.

By MERLIN MICKEL

The obvious need for well-planned coverage of the Caribbean area with United States air routes has been pointed up in a comprehensive statistical analysis on the trans-Caribbean and offshore-island areas by F. H. Cronier, of the Civil Aeronautics Board's Research and Analysis Division, and his staff.

Probably the most complete study ever made of this area's air transport history and potential, the analysis leaves conclusions to the Board on all controversial issues. Five months of work by the division went into its preparation, in anticipation of its introduction as an exhibit in board hearings May 13 on the Caribbean route question. Hence the report is heavily documented with tables and charts.

Not a New Policy—The analysis does not represent a new Board

policy. Moreover, it is consistent with detailed studies in connection with domestic new route proceedings, and the Board's new route procedures, which obviously is intended to reduce the necessity for extensive exhibit preparation on the part of the carriers. It also is in line with the Board's efforts at a concise and thorough record in such matters. An example of the latter is the study made some time ago by the division on overseas mail and another on overseas passenger traffic. Only the first of these has been published.

The current report is expected to be of considerable aid to airlines involved in Latin America route applications, in supplement to their own presentations.

Strategic Importance—It demonstrates the strategic importance of the countries in the area—concomi-

tally, politically and from a military standpoint. It shows significance of short-haul traffic as a support for trunk-line systems. And with the Eastern section of the United States the main source and destination of Western Hemisphere air traffic from the Caribbean area and South America, it indicates plainly that the principal air gateways to the South lie in the Florida and Gulf areas, even for traffic from the United States West Coast. The entire South American continent is east of Miami's longitude.

The study segregates the region under consideration into three areas on the basis of air travel or geographical characteristics. In the first are Mexico, Cuba and the Bahamas. Air travel with the United States, with which this group is contiguous or adjacent, constitutes all or a major part with each. The second segment, the Caribbean region proper, consists of island and continental shore countries of the Caribbean exclusive of the first group. Included are Central America, Colombia, Venezuela and the island community. "The relatively heavy air traffic generated in this region," says the survey, "combined with transit traffic between North and South America, gives it extreme importance in this study." South America, except Colombia and Venezuela, is in the third section.

Representative Years—The year 1933 was selected as most representative for sea and airborne pas-



CONSULTANTS BUSY AT KANSAS CITY AIRPORT MEETING:

To help delegates with their individual airport problems, the consulting room was set up at the Mid-West Airport Planning Conference at Kansas City. In addition to hearing speakers on the many general problems of development and management, the men

also attended the conference that were able to talk personally with experts about the questions peculiar to each situation. More than 600 representatives of 148 municipalities in 14 states gathered in the Mid-West metropolis for the meeting.

COMBINED OPERATIONS... oilmen's style!



BUTANE GAS PRODUCED through oil industry and Government co-operation... with-out profit... for the successful prosecution of the war... and a victorious peace.

Combined Operations is a Commando team for a fierce, concentrated attack on an objective with every available weapon.

And it was with just such tactics that the petroleum industry waged a campaign for one of America's most critical war objectives... Rubber!

If America was to have rubber, we needed a lot of latex trees fast! So the Government and representatives of many oil companies held a conference. It was suggested that one big plant could produce more butadiene cheaper and faster than five small plants.

Everyone agreeing, the Neches Butane Products Company was organized by Atlantic, Gulf, Pure, Socony, Vacuum, and Texaco. This nonprofit organization had access to the finest research facilities, the pooled technical knowledge, and the best brains in the petroleum industry—all so fast in the Government!

That's... Combined Operations! Well, the problems the Combined Operations men ran into were numerous... some of them seemed downright impossible.

But all of them were solved! During the last 24 months, the Neches Butane Products Company has grown from an urgent idea into a plant that will produce enough butadiene to make 240 million pounds of synthetic rubber a year! In just 24 months, 314 bare Texas acres have been covered with a multi-million dollar installation of intricate equipment—equipment that will soon be helping to do the work of 42,000,000 rubber trees!

Combined Operations with a vengeance!



seager comparisons, and 1940 was chosen as the base. Between Pan American Airways and Panagra were the United States flag carriers in the area, and served every principal traffic center, an analysis of the operations of these airlines and their affiliated companies forms the basis for a five-year study—1938 to 1943—of United States air travel in the area.

Of 648,771 air travelers attributed to the total region in 1941, they were credited with 176,041, or 27 per cent. But they accounted for about half the passenger miles flown, the discrepancy being due to the longer average journey of the trunk line foreign travelers.

Trunk Line Travelers—Yet in 1941, according to the survey, the total number of travelers carried by both Pan American and Panagra was within the passenger volume range of the medium and domestic airlines. They totaled about one-half the number of passengers carried by Panagra/Venezuela-Central, but the passenger miles were approximately twice those flown by the domestic carrier.

Trunk line travelers attributed to the first area—Mexico, Cuba and the Bahamas—were "somewhat more numerous" than those carried domestically by Delta, and the total could have accounted for fewer than those who traveled by Chicago and

Southern. No comparison with domestic carriers was made for the third area, because of the long average of its journey, but the study estimated that passenger miles there ran between 30 and 38 million in 1941.

Backbone—"The backbone of international air service is the whole region under consideration," it is stated, "a route obviously afforded by travel interchanged with the United States. The relatively heavy air travel in the Caribbean area is almost wholly with the United States. In South America, however, travel with the United States represents an important but not dominant proportion."

"Were the non-United States travel subtracted from the 1941 total flow in this area, it seems quite evident that the remaining traffic would not have advanced very substantial financial support for the number of through international schedules operated in this region during 1941."

Availability—Any appraisal of availability of air travel or air travel growth, the report said, must rely largely on travel originating in or destined to the United States. It was found "almost impossible" to appraise future possibilities for trunk line earnings of express and cargo, but comment was made that "they should be much greater rela-

Boundary Lines

Examination of international boundary lines on air traffic transfer points was suggested in the report by CAA's Research and Analysis Division on Latin American service patterns. Citing advantages to travelers to replace at point of origin and expense of destination without transfer, the report stated:

"It appears that the convenience of the greatest number of first and second class air travelers would be served by the elimination of the United States international boundary as a necessary transfer point for air traffic."

"This might be accomplished by extension of international postal facilities to United States domestic traffic centers, by extension of United States domestic routes to foreign terminal destinations or by equipment interchange arrangements between international and domestic carriers, depending on the particular cross-boundary and other considerations involved."

The first area in the study includes Mexico, Cuba and the Bahamas. The second comprises island and continental South America, and the Caribbean exclusive of these, including Central America, Colombia and Venezuela with the island community.

tive to the purchasing power of the region here under consideration than they are in the United States domestic field. They should be particularly good in respect to island and interior continental areas." The assumption was, however, that passengers will continue to be the principal source of trunk line air traffic in the region "until such time as aircraft become available that are especially and successfully designed with a view to the economical transportation of cargo."

Advantages—"It seems clear that the principal advantages of air over sea travel between the United States and Latin America have been in travel time saved and air comfort. In terms of cost, air travel has generally been at a disadvantage."

"Just as it is incompatible with the principles of freight transportation to produce large scale growth on the basis of the favorable, but insipid characteristic of oil flows, drugs and other typical air express items, so it is also in-

compatible to predict a large air travel increase at fare levels above the range of any considerable total market."

Eight Factors Listed—One thought-provoking in the analysis was its listing of eight factors of primary importance in influencing the growth of international air traffic in Latin America. These were:

- 1 Degree of mutual understanding and good will prevailing among the many separate political entities included in the total region
- 2 Level of material prosperity in these countries
- 3 Degree of economic, social and cultural lateness between the various countries, particularly between the United States and the large number of the south hemisphere ones (presumably Argentina)
- 4 Degree of mine charged
- 5 Levels of state of airways and airports
- 6 Service standards in terms of frequency, adequacy and safety which are provided for and maintained
- 7 Degree to which conflicting national air transport and non-air transport interests are recognized and subordinated to the convenience of the international traveler
- 8 Efficiency of the over-all service pattern, which will evolve through authorization of various routes and service patterns to serve the best interests of international air transportation

CAA to Expand Air Traffic Control

Expansion of space to quadruple capacity of operations.

Improvements and expansion in the air traffic control system planned by the Civil Aeronautics Administration will increase its capacity to at least four times what it is at present. Furthermore, these plans are ready and can be placed into effect in the immediate future.

Gley A. Gilbert, chief of CAA's Air Traffic Control Division, discussed them in a talk as an air traffic control before the American Institute of Electrical Engineers at New York City.

Improvement Program—The improvement program, he says, is being activated as rapidly as circumstances permit. It covers an improved navigation system using very high frequency radio signals,

provision of more adequate airport point-to-point communication facilities, establishment of an automatic system for flight data handling, and improved control procedures.

Where airports now handle about 10 aircraft movements an hour under instrument weather conditions, they may be made to handle 40 and place of the 10 minute separation between planes on the airport's airways—now 12 minutes—separation time will be cut to an extended 5 minutes.

Obstacle—Gilbert believes the greatest danger of efficiency of air traffic control—safe landing of all aircraft at intended destinations exactly on schedule, or in normal flight time—"must be closely approached before air transportation can become fully mature." He believes the way will bring technical improvements, but expects delay before they can be worked out to apply to postwar requirements. Despite developments, the weather will continue after the war to be a factor affecting flying, at least until 1950.

Among the possibilities of future aircraft equipment for air traffic control, he mentioned "collisions warning device," "automatic position reporter," and "traffic clearance indicator," the last two of which may eventually combine in a "block signal system," as the delinquent device.

Automatic Reports—There may come a time, Gilbert says, when voice as a communication medium can be eliminated in the control system, through automatic transmission and reception of position reports, and provision for automatic transmission of control instructions from ground personnel to pilots.

He estimated that ground facilities, to cope with these improvements, will require about 850 air stations in the next few years, more than three times the present number of scheduled air carrier airports. Contingencies in a service pattern to afford traffic control to all air space in continental United States. Civil airways control, of course, would continue.

Present airway traffic control circuits are protected by about 35,000 miles of leased telephone lines, serving more than 1,800 individual stations. More than 11,000 miles of teletype circuits are in operation, and CAA expects to expand that same to 25,000 miles during the next twelve months.

HUNTER DEVELOPS SIMPLE GASOLINE UNIT PREHEATER

One-to-an-Engine Method Has Advantages of Flexibility And Fuel Economy

EASY TO BOOK UP—TAKES DOWN

CLEVELAND, OHIO—The problem of preheating aircraft engines to start in cold weather has been simplified by the new gasoline heating preheaters recently developed by Hunter Aircraft Corp. of this city. The heaters are light and



compact, can be easily hooked up to any engine, and need no gas engine. They heat a blower of air to directly enter all working parts.

The Hunter units can be used economically for either single or multiple engine planes. Each unit, weighing but 47 pounds, delivers up to 25,000 Btu per hour, circulating heated air in an engine housing through the closed-circuit ducting. The unit is designed to pump hot air over the cold engine in sufficient volume to bring it to start during temperatures in a matter of minutes, even in severe weather.

Details about the broader opening of an engine cover of a small plane, as illustrated below, or to special aircraft engine covers provided for rapid installation, above, heated starting and recordkeeping of air weather conditions are results in most hours of all working engine units. Oil system, valves and valves can be checked as well as carburetion and ignition systems, thus preventing the non-efficient start-



age ground jet delivery in the few runs of an engine based into a cold start.

Complete information on the Hunter Preheaters and delivery details can be obtained by writing or visiting Hunter and Co., 1540 E. 17th Street, Cleveland 14, Ohio.

(Continued)



AIRPORT CONFERENCE SPEAKERS:

Among speakers at the Mid-West Airport Planning Conference at Kansas City were (left to right, seated): Frank W. Mori, educational consultant for the Civil Aeronautics Administration at the University of California; E. Lee Tolman, executive vice-president, Transcontinental & Western Air; O. C. Crosser, conference chairman, (standing, left to right) John M. Hayes, American Aircraft Corp.; Dr. John Heinrich, Jr., Washington, D. C. Engineers; and Lora E. Holland of Kansas City.

Beechcrafts at work

NUMBER 9
OF A SERIES



Did you ever see a classroom flying? Well, here's one. It is an AT-11 Beechcraft bombing aircraft at work. An off refinery, in effect, is the target for its bombs. The student crew has released those bombs squarely "on target." • In countless training missions

like this one, American bomber crews learn the lesson that spell disaster to Axis refineries and war-industry installations of every kind. Beechcrafts are their flying classrooms. • This is the sort of schooling that makes Americans the World's Best Trained Airman.



Official Photograph U. S. Army Air Force

Beech Aircraft

BEECHCRAFTS ARE DOING THEIR PART WICHITA, KANSAS, U. S. A.

Post-War Traffic Possibilities Underestimated, Loening Declares

WPB aircraft consultants soon regulated competition as America's secret weapon against European monopoly system in battle for air transport trade.

One of those who think possibilities of international air travel after the war have been underestimated is George Loening, consultant on aircraft at the War Production Board. Traffic in this field, he believes, will be 28 to 30 times the figure estimated by advocates of the "open markets" policy in post-war aviation.

Moreover, he is opposed to this policy. Competition, he thinks, is the life of the future air trade between this country and other nations.

Regulated Competition — "The only secret weapon that we really have with which to win out against the monopolies that the European countries, particularly Great Britain, seem so intent to set up," he says, "is to run our international aviation on a regulated competition status—competition enough to give the utmost improvement and least development in excellence of our service, but a regulated competition that will not allow cut-throat wars."

In this speech to gladden the hearts of domestic airlines, who

fear competition, Loening addressed the Foreign Policy Association at Minneapolis last week on the future of air transport competition. His address presented his own views, but he speaks with authority.

He was an early aircraft engineer, manufacturer and aviator, and wrote the 1935 report to Congress on Aircraft and the Merchant Marine.

Pan American — Loening and Pan American Airways' foreign business "is almost large enough now to permit others to share in this lucrative field," a field in which he observed that Pan American has done "only moderately good work."

Then, rather than members, should be the gauge of post-war trans-Atlantic estimates, he suggested. Anticipating 15 hours for that trip, he said, "what we really should take are the figures in the United States of the number of people on all the railroads and all the buses that take trips to places 18 hours away."

United Air Lines — Thus he figured that United Air Lines' figures

Highlights

Highlights of speech by George Loening, WPB Consultant on Aircraft, before a Minneapolis audience.

• Of the aircraft manufacturing industry: "We are delivering more transport aircraft planes in shipping capacity—in just two weeks—than we had in operation on all the airlines of the United States before Pearl Harbor. Since the replacement of before emergency was formerly figured in a 30 percent basis, due to use and obsolescence, about two days' deliveries from this industry per year would be all that would be needed to keep our former air-transport system going."

• Of Pan American Airways, by whom he once was employed: "The transoceanic air monopoly built up by Pan American Airways to further their development has been exploded, but in so detrimental way to that great company—rather as evidence that we are not dependent on the rest of the world at all."

• Of post-war planning: "Personally, I feel there are too many post-war plans and too much wish to join by substituting an additional one."

• Of the railroads: "As soon as we submit judgment as to aviation's progress and development to the old railroads—throwing big heavy gold which cross—we will kill it. Every three gets old and lives in the hills. The railroads cannot be allowed to claim the right of eternal life via the business glands of aviation. Their business should be to civil aviation by super streamline trains—super luxury—super cheapness."



UNITED MECHANIC GETS "NO SMOKING" PAYOFF:

Fifteen years of abstinence of "No Smoking" signs in hangars paid dividends for Charles Storme, lead mechanic for United Air Lines at Chicago. Co-workers gave him a package of chewing tobacco for each of his 25 years with the company when he retired. United's 25-year anniversary was Storme (center) in skin suit (left to right) E. W. Marmann, chief mechanic; G. C. Kline, lead mechanic; E. D. Edwards, UAL Chicago station manager; and William Manley, lead mechanic.

of some 51,000 trans-Atlantic passengers in the first year after the war—or 550,000,000 passenger miles—it too excessive. "Look how organizations can blow up on your face," he said. "It so happens that Pan American Airways has already officially reported that they flew 475,000,000 passenger miles this last year alone."

Quoted and Pan American, he commented, should read each other's articles. Loening contends that this is not the time to initiate on post-war methods of handling air transport. "In all our discussions we have said that 'we had better not say up anything—certainly not anything like a monopoly such as it being

streamlined in the Seattle flight now."

Optimistic—His observations on the domestic situation also were optimistic. Probably the aircraft manufacturing industry will be about 10 percent of its present size (higher than other estimates), but the air transport industry by 1950, he feels, is likely to have about a two-fold increase in passenger travel, 50-fold in cargo carrying, and 25-fold in private planes. And there is a likelihood that the mail load will be swollen by virtually all first-class mail beyond overnight distances.

"All of this put together, however," he says, "can only make use of three to five thousand large-size transport airplanes." Such an industry, if the war ends soon, should have a gross income of around two billion dollars a year—"not very stupendous" in the domestic field compared with the income.

Flares vs. Railroads—Looming was a distinct difference between selling transportation by railroad and selling it by air, although the end product—transportation—is the same.

"If the air is going to take some business from the railroads, that is just inescapable progress. As a matter of fact there is fear of that..."

That, he believes, is the basis for serious carrier opposition to the new bill, even though they have stood on the states' rights issue as the vehicle for the opposition. Actually, the states' rights matter isn't very serious, "because flying carriers very far out of the question alone and would sooner or later have to submit to federal regulation."

No. 1 Problem—He sees the question of monopoly vs. competition as the No. 1 problem in the international picture. Post Armstrong, he told the Minneapolis audience, has built up "a great glamour, prestige and mystery of flying the ocean," but actually "it's only moderately good work as revealed in a fair and unbiased way." He saw the war and the Air Transport Commission as cutting into Pan American's prestige.

United Air Lines joined Pan American in advocating free-line international competition, with the argument that the percentage of steamship travel the airlines would get would be so small that 15 planes could serve the North Atlantic better potential market next year and 43 by 1945, but "actually the traffic will be 25 to 30 times as

Hits Shippers' Bid

Should shipping companies be allowed to enter the international air transport field? Green Looming, an consultant of the War Production Board, answers this with another question.

"If the shipping companies were to fail today," he said, "the DOT (which the Maritime Commission gave them the opportunity to enter the air business), as to find to show any serious interest and to allow the air interests that is completely irrelevant. Congress then we are justified in estimating the further development of aviation to their hands now."

Besides, "we would be turning over the air business to that section of American international enterprise that allowed foreign vessels in the pre-war era to capture 70 percent of the United States foreign commercial business."

such figure." Arguments for a "domestically oriented" Looming says, " overlook the point that the operator of the fastest, most comfortable and safest aircraft will win in the airline field."

He dismissed questions of air rights or post-war air bases as typically in the field of "vague post-war planning," and said another item that must await war developments is that of freedom of the air, which is freedom of transit, freedom of facilities, or freedom of air commerce.

Mass Air Transport 'Many Years Away'

Passenger rates must be cut to 1 1/2 cents a mile compared with 5 1/2 cents of today.

The airplane will not be a mass transport facility for many years, until it can reduce average passenger rates from 5 1/2 cents to 1 1/2 cents a mile, but domestic air transport within four years after the armistice should increase five times over the best pre-war year.

William A. Patterson, president of United Air Lines and the domestic industry's leading conservative, told a Chicago group that in the Pacific's best year, 1933, when 20,000 travelers crossed that ocean, one 100-passenger airplane a day

would have handled the entire traffic.

43 Flares for Atlantic—Still having his projections for the future on figures from the past, he repeated his contention that 43 100-passenger planes could handle all North Atlantic "Class A" passenger traffic "which we see for over five years from now."

The five-line growth of domestic air traffic four years after the war would be United with a \$194,300,000 business against \$15,000,000 in 1941, employees totaling 18,500 against 4,300 in 1941, and 50 planes of 20-passenger with 40 planes of 21-passenger instead of 25 of the smaller type three years ago.

Out of Subsidy Class—He said the airlines are on a second financial haul, out of the subsidy class, that probably the greatest technical development had been in radio devices which will "greatly promote" schedules and safety. He reiterated adherence to the current government policy for U. S. participation in international flying.

Another official, Ray D. Kelly, superintendent of development, stressed importance of "down to earth" engineering before another Chicago meeting, using other data from the company's research division.

Four Airline Types—After the war, aviation no longer will depend so largely on other industries for a wide range of products. Its engineers will seek appropriate strength with maximum loads and their success will be reflected in improved service in other fields. Kelly sees four possible commercial air liner types within five years after the war.

A four-engine, 670-hp, 180-passenger ship of 250 mph cruising and 3,000 to 3,500-mile range.

A four-engine, 25-hp moderate range delivery sleeper.

A four-engine 35- to 30-hp "coach" or "club" carrier for both passengers and cargo.

A two-engine 15-hp carrier of passengers, freight or both.

Photos Map Fields

Aerial photographs are helping Civil Aeronautics Administration determine best location of airport sites. Successful tests have been made at about 25 CAA experiment stations. John Fred Givens, chief of Airport Development, believes the development will be of value in foreign operations.

* NUMBER 5 IN A SERIES, TRACING FIFTY YEARS OF KELLETT ROTARY WING PROGRESS *



Pioneering Peacetime Progress

THE above photograph of a Kellett rotary wing aircraft performing in mark maneuvers was taken about six years ago.

For almost a decade before this, Kellett engineers were developing and manufacturing successful rotary wing ships. And such was true, Kellett has continued to pioneer progress in the service. With such turn of the calendar have come important advances, as continuous research and intense cooperation have added to the Kellett organization's total experience.

While we engineers, all Kellett production is concentrated on industry applica-

tions—commercial light and heavier planes, as well as rotary wing aircraft. But when peace comes, not expanding itself of forward thinking engineers looks to opportunities for Kellett to save time and cut costs in a wide variety of peacetime applications: the conversion, inspection and servicing of coast country electric lines and old pipe lines, their use as mail and passenger shuttle craft, service to rural communities, the patrolling of forests and borders, spraying crops and trees. Kellett Aircraft Corporation, Upper Darby (Philadelphia), Pennsylvania.

Known Kellett models, developed in cooperation with the United States Army Air Corps, are in the illustration on page 34.

KELLETT

OLDEST ROTARY WING AIRCRAFT MANUFACTURING COMPANY

AVIATION NEWS • February 7, 1944



...and Kellett is looking for a share of expanding service in the nation.

24

United's Management Stock Plan Revives Question of Bonus System

Despite occasional abuses, providing further incentive to officials is generally profitable to stockholders as well as direct beneficiaries of program.

By ROGER WILCO

The issuance of 100,000 shares of management stock, recently authorized by stockholders of United Air Lines, has again raised the question of the use of bonuses as an additional means of compensation to officials.

While United's stockholders approved the plan at its last annual meeting, one individual criticized the plan. In reply, president Patterson and United is the only airline in the country that has not offered its officials a chance to buy stock on advantageous terms. While special deals as an added inducement to management have been known in the air transport industry, by no means have all airlines participated in such arrangements. As far as can be determined, air carriers who have figured prominently in favoring officers with stock bonuses have been: American, Chicago & Southern, Eastern, National, Piedmont, Pan American and TWA.

5 Criticized and Defended—Selling stock to management on advantageous terms is a characteristic well established in American corporate practice. Frequently, much abuse has developed through such arrangement. The principle, however, is a sound one and where applied within the confines of reasonableness, has led to progressive management policies and been to the benefit of the companies involved.

By issuing stock bonuses or selling shares at a discount to officers, a dual purpose is generally intended. One objective is to create added compensation to the officers concerned. Another is to give the principals a sense of pride and ownership in the enterprise. Both purposes presumably are believed to encourage the best possible ef-

forts of the officers interested in the constructive development of the corporation.

5 Options—The most logical approach has been found in the use of stock options. By this means, officials are given the right to buy stock of the company at a stipulated price, generally at discount level for some period in the future. The theory underlying this arrangement is that if the management is successful the company will prosper, hence the stock will appreciate in price. In this manner, the stockholders and management both benefit. Reduced to its most effective and justifiable form, special stock deals generally should accompany low or normal salaries.

Much criticism, however, has been attached to those arrangements where cash salaries along with expense accounts have been offered to management and may be construed to be ample compensation in itself without any added inducement. Further, much censure has been directed in those instances where a limited and arbitrary stock plan is used as a reward for the sole beneficiaries of stock plans to the exclusion of others who also play important roles in the affairs of the company.

5 United Stock Plan—The United management stock proposal has a number of interesting features. While a total of 100,000 shares of the series are authorized, it is likely that this stock will be issued over a period of time. No one person will be entitled to acquire more than an aggregate of 5,000 shares, with about 200 individuals eligible to participate.

The sale price will be at not less than book value (\$12.48 on Sept. 30, 1943) at the rate of six, or more, shares for each \$100 of stock.

price for the common is currently around \$52 per share. This management stock will be convertible into the common on a share-for-share basis about five years after its acquisition. Generally, the management stock must be offered to the company before the holder can attempt to sell it elsewhere.

5 Other Deals Studied—It is interesting to examine a number of other special stock arrangements favoring airline management. American, in 1935, granted options on 15,000 shares at \$12.50 per share. Since then, the stock has sold for more than \$70 per share and is not far from this level at present. The largest percentage of these options went to C. B. Smith, then president of American.

Pan American granted its president, J. T. Tupper, an option to purchase 99,990 shares of stock at \$15 per share. This contract was made in December, 1935, and was subsequently exercised. With Pan American's stock selling around \$30 per share, the gain realized is evident.

5 Eastern—Capt. Eddie Brinkman received, in 1938, an option to purchase 20,000 shares of Eastern at \$25 per share over a period of years. This was later increased to 5,000 shares. Also, in 1939, 20,000 additional shares were reserved for issuance at the same price to certain officers and employees. This, too, was subsequently increased, 4,000 shares being added. Most of these options have since been exercised. The price of the company's stock is currently around \$50 per share.

TWA provided an interesting stock purchase plan for employees, starting in April, 1937. A fringe benefit not exceeding 50,000 shares was reserved for employee participation at discount levels. Up to Dec. 31, 1940, the stock optioned under the plan was valued as follows: 1937, 6,979 shares at \$23 per share; 1938, 17,280 shares at \$23.75 per share; 1939, 22,049 shares at \$25.95 per share; 1940, 19,870 shares at \$7.46 per share. Jack Frye and other TWA top officials were the chief beneficiaries of this plan. The company's stock is currently quoted around \$30 per share.

It is evident that special stock deals have in the past been used in the air transport industry. No clear formula is always possible in evaluating these arrangements. For example, many companies may be part of an industry which happens to be in the midst of a boom or through circumstances beyond

management control. In other words, the course of the business cycle has, in the past, spelled success or failure for many an executive despite or without any special efforts on the part of the executive officers.

AAF Reclaims Oil

Takeover is used in training flights in U. S. AAF camps.

The Air Service Command will reclaim an estimated 3,000,000 gallons of used aviation engine lubricating oil this year, which will be made available for incinerated use in the Air Forces in continental United States and will effect a saving amounting to approximately a half-million dollars.

The reclamation process involves the re-refining of old oil, which will be processed in specially operated refineries, strategically located near centers of military aviation. There are no plans at present to operate refineries overseas for reclamation purposes.

Air Service Command disclosed that 80 percent of all oil used by the AAF is consumed by training and routine flight in the United States. Only about 20 percent of the oil used by the AAF is burned can be processed and reused.

United Discontinues Airport Division

Unit becomes part of Pratt & Whitney organization.

United Aircraft division of United Aircraft Corp. has been discontinued and has become a major department of Pratt & Whitney Aircraft division of the corporation.

L. E. Shaw, who was general manager of the airport division, will continue as airport manager. In addition to Revuechuk-Paid, which has been greatly enlarged in the past few years, the airport department operates an engine overhaul shop, a wind tunnel, now under construction, a service hangar and a shop for manufacturing and repair of airplanes.

H. M. Harter, president of the corporation, explained that "one of the prime objectives of this change is to coordinate Airport activities which are and have been so closely related to the Pratt & Whitney Division."



Safety First: WAC Lt. Col. H. Doyle and Lt. Col. Harry D. Inver, whose reduction of 40 percent in accident frequency in AAF aircraft used for the command of Distinguished Service to Safety award.

49% Accident Cut Wins Award for ASC

Establishment of a national safety program for deposits and installation of Air Service Command has resulted in reducing accident frequency among the civilian employees by 49 percent during 1943, and the award is the command by the National Safety Council of Distinguished Service to Safety award.

A special analysis of the award was prepared for presentation Feb. 4 to Maj. Gen. Walter H. Frank, commanding general of ASC, at the Mobile (Ala.) air depot, by Col. John Stetson, president of the council.

5 Accident Rate Cut—Major credit for the program is given to Lt. Col. Harry D. Inver, veteran of the World War and former civilian industrial safety engineer in Pennsylvania, who was awarded a navy duty last September to organize AAF's safety program, and WAC Lt. Col. H. Doyle, former New Rochelle, N. Y. school safety counselor.

Accident frequency rate for AAF camps was 37 percent last year, of which any comparable industry, for 1942, according to U. S. Department of Labor, was that of the aircraft industry, which had a frequency rate of 114 percent.

Goodyear Produces New Engine Mount

Reduces vibration as well as weight, company reports.

A new type of engine mount, which requires less rubber, has been developed by Goodyear Tire & Rubber Co., and is being not only to reduce the weight of the Flying Fortress, but also reduces vibration.

W. C. Winters, manager of Goodyear's research and development, and J. L. Arnold, mechanical goods engineer, were prime movers in the project. Arnold said the engine mounts permit the Flying Fortress engines to reach their vibration peak much earlier than other types of mounts and that often they reach this peak with the new mount before flying operation noises are reached.

5 Aids in Reducing—Thus, of course, permits more accurate aiming of bomb sights and guns, longer life for the airplane and less wear-strain for air crews. Arnold estimated the new mounts decrease the original weight of each Flying Fortress by about 15 pounds. When the plane is in the air, the mount means a weight saving of about 40 pounds, he said, on the basis of extra lifting capacity which is needed for each engine mount.

He explained that all the engine vibration is absorbed by a natural rubber drive in the mount, one of which are supplied for each Flying Fortress engine. In addition, a linkage in each engine mount is of a plastic which eliminates any need for oiling or greasing. Another feature of the mounts, Arnold said, is the fact that they are interchangeable with mounts used heretofore. No design change was necessary in the structure to which the engines are suspended and which, in 1939, are attached to the wings.



Personal Flying Previews

SEVERAL WEEKS ago an employee at Pennsylvania-Central Airlines' Washington base agreed to tutor eight would-be private flyers in ground school. Somebody noted it on a company bulletin board. When the instructor arrived to meet his students on the appointed day there were 160 persons waiting.

They included employees from nearby hangars. Instead of dropping off after two weeks the number rose to more than 150. The astonished founder has a sizable "school" on his hands. PCA discovers it has one of its best employee relations projects to date.

Several classes are being formed. The students have already organized a club and employees among them own about four light planes which, with others, will be pressed into flying service when regulations and weather permit.

The scene switches to Parker Air College. Employees at all of the five bases were offered free flight training, no ground school provided for whatever. The well known two-place cessna, generally credited as being one of the easiest planes to fly, is in use. About 90 percent of the employees signified initial interest. About 75 percent are still taking instruction.

Although the program is nowhere near its completion, Parker officials are confident it indicates already that almost anyone can, in a reasonable time, learn to fly a modern no-spin, no-stall airplane.

These are significant events. It may be argued by the pessimists that both originate within commercial aviation enterprises and thus start with pre-selected groups who would be expected to have manifested a deeper interest in flying than a cross-section of the public. However, aviation should be an old story to those who are in it every day. If such response to personal flying opportunities arises at PCA and Parker, it is difficult to put a ceiling on estimating the number of Americans who will respond to simple, safe flying courses after the war.

Airport Management

THE NEW DRESSER in airports is one of the brightest spots in aviation.

Slipshod management will not be tolerated after the war. Scheduling of three midwest airport meetings within a period of sixty days, at Kansas City, Fort Wayne, and Wichita, has aroused response which in each case has far exceeded early plans.

Meanwhile, in Washington, the Civil Aeronautics Administration named a consultant to its air-

port division who is preparing to collect data from all 1,900 U. S. publicly owned airports for a study of airport management.

Comparative data will be available to airport managers, owners and the public. CAA emphasizes it will not be a case of telling the people how to run their business, but instead "a fact-finding service" offering statistics, cost and revenue systems for those who wish to refer to them. Heretofore adequate management information has been difficult to obtain. With proper procedure, CAA's new study should aid materially to raise standards.

Marked for obsolescence are cramped and dirty administration buildings, with inadequate public services, crummy restaurants, and incident employees. The air traveler of tomorrow has a right to expect the same development and progress in air terminals as in the fast, luxurious airlines that flies between them.

The Airlines Look South

THE REPORT prepared by the Civil Aeronautics Board's Research and Analysis Division, under F. H. Cronner, on the Caribbean area, to be introduced as an exhibit in coming route hearings, represents the most complete document yet on the subject. It justifies the unprecedented scramble of U. S. Airlines to lay the foundations for service to the south.

Scores of charts, maps and tabulations bring together for the first time much background on the area, based on data from carriers, CAB files, Commerce and State Departments, Post Office, and the Maritime Commission. Emphasis is rightly placed on factual matter. Only in some of the analysis of this information, on applying airlines find any cause for controversy.

Future possibilities for both cultural and recreation travel between the U. S. and the Caribbean area seem almost limitless. . . . The influence of high per capita wealth in the U. S. is especially great in the Caribbean area. Travel between the U. S. and off shore island countries appears to depend little on the purchasing power of such countries," the report indicates.

Because of these unique characteristics of the area, plus the ever present national defense element, the Caribbean area, including Mexico and northern parts of South America, will develop inevitably as one of the greatest aerial networks.

"In no region of the world," the report points out, "does air transportation offer so many advantages over surface transportation. Almost the entire historic market has moved at rates in excess of those which seem compatible with probable future air transport costs."

ROBERT H. WOOD

...IT'S ALL ALUMINUM



WHEN ALUMINUM OCCUPIES
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WEIGHT SAVING = $\frac{2}{3}X$

Let X represent the weight of conventional heavy copper coil coolers and coolant radiators. Then $\frac{2}{3}X$ is the percent saving in weight effected in such of two known flying planes by the use of Clifford Featherweight aluminum alloy coolers and coolant radiators. One plane is actually 100 lbs. lighter. In the case of the other there is a total potential weight saving of 200 lbs. Such vital economies over weight are made possible by Clifford's history making discovery of the lightweight method of brazing aluminum in very thin sections — a discovery that permits complete interchangeability — same size and shape — of heavy weight copper and Featherweight aluminum alloy in aircraft oil coolers and coolant radiators.

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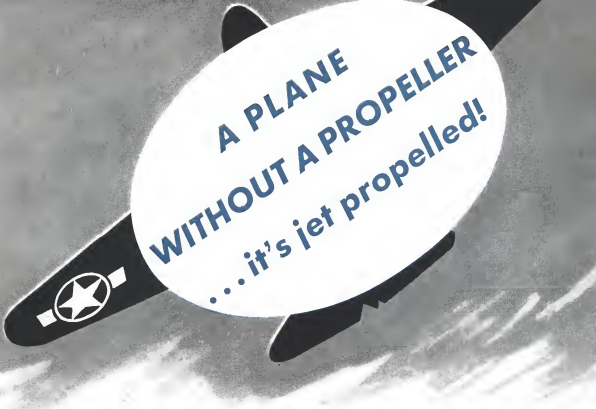
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